

# ENERGY TASK FORCE COMMITTEE

## Visit to City of Saco on August 26, 2008

Committee members David Chipman, Dick Newman, Spike Haible, Prescott McCurdy and Bob Bartley were present for the Saco visit, which constituted our August meeting. Several other interested Harpswell residents joined us. Howard Carter of Saco made the presentation. Saco ranks among the first of all cities and towns in Maine for its progress in energy conservation and development of alternative energy, and is therefore a valuable source of guidance for us.

We visited the railroad station complex, where Saco's new 50 KW wind turbine is located, and also the City's waste treatment plant facility. The discussion with Carter revealed, in addition, a number of incidental steps Saco has taken by way of energy conservation, and the measures and devices used for energy saving. Many of them should be applicable in Harpswell.

### Railroad Station, Condominiums and 50 KW Turbine

This complex is situated on Route 9 near the middle of Saco. The station is in an advanced stage of construction. The turbine has been operating for nearly six months, though the condominiums have not yet begun to be built. The turbine's output is sold to CMP locally. The turbine's output will be equivalent to most of the power needed for operation of the station and for street lights in the immediate area. The station will be heated with a geothermal unit (reaching to a depth of 1600 feet). Condominiums and retail space will be developed nearby.

The 50 KW 100 foot high wind turbine, manufactured by Entegriety, cost a total of \$207,000 installed. It was fully paid for by the City and didn't necessitate debt financing. The 50 KW model was selected without a prior wind study, based on information from wind maps plus a production guarantee from the manufacturer (set at a relatively modest level). The generator unit rotates into the wind, but the propellers cannot be mechanically feathered (as they can on large turbines). This turbine unit will withstand winds of up to 133 miles/hour and shuts down at wind speeds of more than 50 miles per hour.

During the most recent full quarter of the year, the turbine generated 18,000 kilowatts at an estimated delivered cost of 14.2 cents per Kwh. It is expected to generate 90,000 KW per annum. The electrical output is alternating current, three phase, at 460 volts. Maintenance costs for the first five years are included in the purchase price. They total \$1300 per annum plus a CPI adjustment, for years 6 through 10.

Carter said they estimate the payout on the investment to be 16.4 years, assuming the present cost of retail electricity remains at present levels, but if one assumes substantial escalation of retail electricity prices in the years ahead, the payback will be far more rapid. (Saco's generating costs for the Entegriety turbine should remain nearly level for the estimated 30-year life of the turbine, because wind costs nothing, whereas purchased electricity inevitably will rise in price during the years ahead.)

Maine's "net metering" rules apply to the power this turbine generates and sells to the local utility because its nameplate capacity is less than 100 KW. Consequently, to the extent that its output meets or

exceeds needs, power sold to the local utility is netted against charges for the power it purchases. Power sold back is credited at the same price as power purchased.

Carter said that Saco is satisfied with the performance of the Entegriity turbine.

#### Waste Treatment Facility – Small Turbine and Conservation Devices

A smaller turbine (1.8 KW), purchased from Southwest for \$8,500 and installed by City staff members, provides a minor part of the treatment facility's needs.

One of the treatment facility offices utilizes a "Solar Tube" for lighting. The tube draws on sunlight, which it amplifies so as to illumine the desk areas on days when sunshine is adequate, and thereby eliminate need for the use of electrical lighting. Solar Tubes, we were told, are available from a vendor in Portland or through the Green Store there. When sunlight is inadequate, normal lighting has to be used, but the solar tubes substantially reduce electrical costs. The cost of a 14-inch solar tube is \$425.

Saco utilizes "Smart Strips" extensively to eliminate phantom energy. All of the devices that utilize electricity in a given desk area are plugged into the smart strip, which is turned off entirely, from one switch on the strip, at the end of the day, thereby eliminating phantom power consumption. Another device mentioned is an instrument that measures phantom power consumption, if attached to an appliance.

Saco removed all small refrigerators from its office premises, in order to conserve energy. (Note: vending machines are heavy consumers of energy.)

#### General Comments

Carter said that Saco had initiated its "greening program" principally with a number small steps of conservation, including reduction in office lighting costs. Among the steps he suggested were conversion of as many street lights as possible to LED's. The turbines and solar installations came later in the program.

We were favorably impressed with Carter's knowledge of conservation and alternative energy, and think he would be a valuable consultant, if available to advise on Harpswell's programs.

R. T. Newman

8/29/08